

**WARNING**  
TO PREVENT ELECTRICAL SHOCK OR FIRE HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. BEFORE USING THIS APPLIANCE, READ BACK COVER FOR FURTHER WARNINGS.



# Citation<sup>TM</sup>

## Operating Guide

### GENERAL DESCRIPTION

The Citation<sup>TM</sup> incorporates the features needed to reproduce the complex tonalities and dynamics necessary for today's guitarist. Our extensive Research and Development program has recently yielded several significant and, we feel, pivotal breakthroughs in amplification of the electric guitar. For many years, both guitarists and instrument amp manufacturers have diligently sought to reproduce the warm, sensuating characteristics of vacuum tubes with solid state equipment. Our innovative, new Citation<sup>TM</sup> features a new effect that we call Saturation<sup>TM</sup> which produces the kind of gain compression/expansion that has previously been obtainable only with a select few, extremely high gain, relatively powerful tube-type amps. In the past, many companies have attempted to reproduce the much sought after characteristics of vacuum tubes by using field effect transistors, mosfets, interstage transformers, series gain stages, etc. The results were usually **loud** but didn't accomplish the goal. We feel our new Saturation circuit gives the necessary dynamic characteristics, harmonic texture and compression/ expansion so eagerly sought after by contemporary musicians.

The combination of two totally separate input channels, Saturation<sup>TM</sup> effect, and extremely effective equalization circuitry enables the Citation<sup>TM</sup> to, quite literally, simulate almost any guitar sound available from any amp old or new. Each channel also features its own pre and post gain controls in conjunction with our unique Automix<sup>TM</sup> switching circuitry. The Automix<sup>TM</sup> remote footswitch enables each channel to be selected individually or combined for a totally different tonal response. In addition we have included a full-range reverb system that is functional on both channels. All of these features mentioned above plus a complete patch panel of **preamp** and **line outputs** and the all important power amp input creates a portable package that is virtually unmatched by any system anywhere near its price range.

The power output section of the Citation<sup>TM</sup> is totally solid state and produces a harmonically rich 160 watts RMS into a 4 or 2 ohm load.

## EQUALIZATION

### PRESENCE CONTROL

The presence control is an active, extreme high frequency EQ with cut and boost capabilities. This control may be used similarly to a "bright" boost for the upper range of frequencies when additional "bite" or "edge" is desired. Full clockwise rotation will achieve a boost of 12 dB and full counterclockwise rotation will achieve a cut of -12 dB.

### HIGH EQ

The high EQ control is similar in operation to typical conventional treble controls and varies the response of the high end frequencies below the effect of the presence control. The operation of this control is very conventional and should present no problem to the operator. A rotation clockwise increases the high end response and when the control is rotated counterclockwise less highs are apparent in the tonal coloration.

### MID FREQUENCY EQ CONTROL

The mid EQ control tailors the vital mid-range response of the instrument which is being amplified. Many times we tend to overlook the importance of the mid frequencies and the fact remains that, when we are playing music, most of what we are projecting to the audience is some form of mid range. This control operates in a conventional manner of rotation and clockwise settings will result in "fatter" mids and a closer relationship to flat response. A counterclockwise setting will result in "thinner" tonalities.

### LOW FREQUENCY EQ CONTROL

The low frequency EQ control is the element for determining the low frequency response of the amplifier. This control is conventional in operation and permits smooth and precise action when tailoring the low frequency coloration of most any instrument that may be used with this system. Low frequency response is increased when this control is rotated clockwise and less bass response will be obvious when the control is rotated counterclockwise. Care should be taken to not overboost the low end and avoid prematurely overdriving the power amp. Most amps that are well respected for hard rock music have somewhat limited low end capability, therefore, it is not a good idea to use a great deal of low end boost. With guitar signals, extreme bass boost does not add significantly to the projection capabilities but does consume a disproportionate amount of power, generally at the expense of the high and middle frequencies which have an extremely pronounced effect on the apparent loudness and/or projection; i.e., do not use too much bass boost when you need all the projection you can get. When using this control it should be remembered that bass frequencies generally require more output power than middle or high frequencies.

### LEAD CHANNEL (GAIN BLOCK™)

#### POST GAIN CONTROL

The post gain determines the overall level of the **lead channel** and delivers the final signal to the power amplifier. The action of this control is similar to that of a master volume control and can be used to tailor the overload dynamics of the lead preamp by decreasing or increasing the sensitivity of the power amp. The operation of this control is conventional and no difficulty should be encountered. Please remember, to achieve a warm Saturation™-type sound it is recommended that the post gain control be set at "5" or less. Please refer to the detailed instructions for Saturation™ in order to achieve optimum results when you are using the post gain control in conjunction with the pre gain and Saturation™ controls of the lead gain block. (See Caution)

#### SATURATION™ CONTROL

Our Saturation™ effect closely duplicates the gain/compression effect of vacuum tubes. This control is totally variable for the amount of Saturation™ effect that is necessary for each particular application. It should be noted that the **Saturation™** effect must be balanced with proper setting of all three controls in the gain block for maximum effect. The **pre gain** must be set high enough for adequate drive voltage to the Saturation™ circuit, while the **Saturation™** controls should be varied to achieve the desired sustain/overload characteristics. The **post gain** (master volume) sets the sensitivity of the power amp and must be used in conjunction with the above controls for proper results. The Saturation™ effect actually takes place in the preamp and is not concerned with the power amp sensitivity so care should be taken with this system to keep the post gain control below the clipping level of the power amplifier. (See post gain control.)

THE PROCEDURE FOR ARRIVING AT OPTIMUM CONTROL SETTINGS WITH ANY PARTICULAR GUITAR AND EQUALIZATION CHARACTERISTICS ARE AS FOLLOWS:

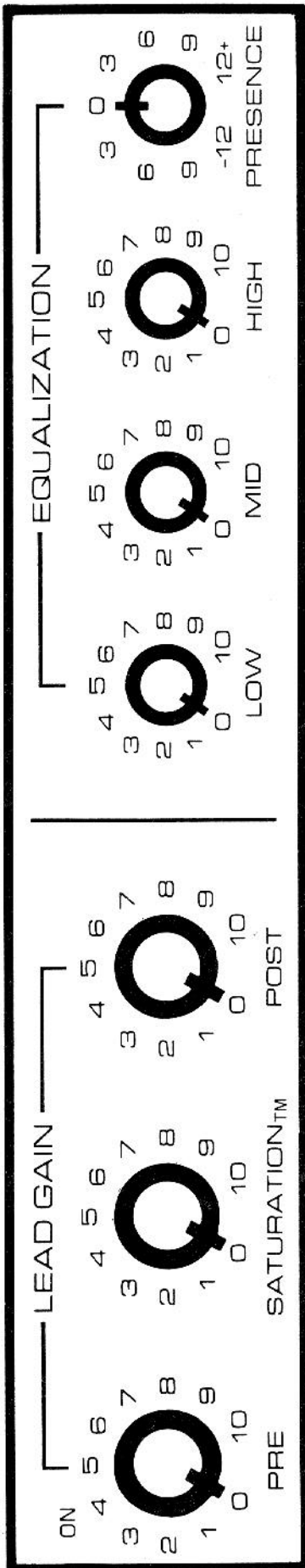
1. Plug into the high or low gain input jack.
2. Set the post gain control somewhere in the **middle** of its range.
3. Set the pre gain control somewhere in the **middle** of its range.
4. Adjust the Saturation™ control for the desired amount of gain/compression.
5. Readjust the **pre gain control** to assure adequate drive.
6. Readjust the post gain control just below the point at which the power amp reaches the clipping point and adds its own harmonics to the predistorted signal. This setting is readily noticeable since additional harmonics are audible when the power amp reaches its maximum output level.

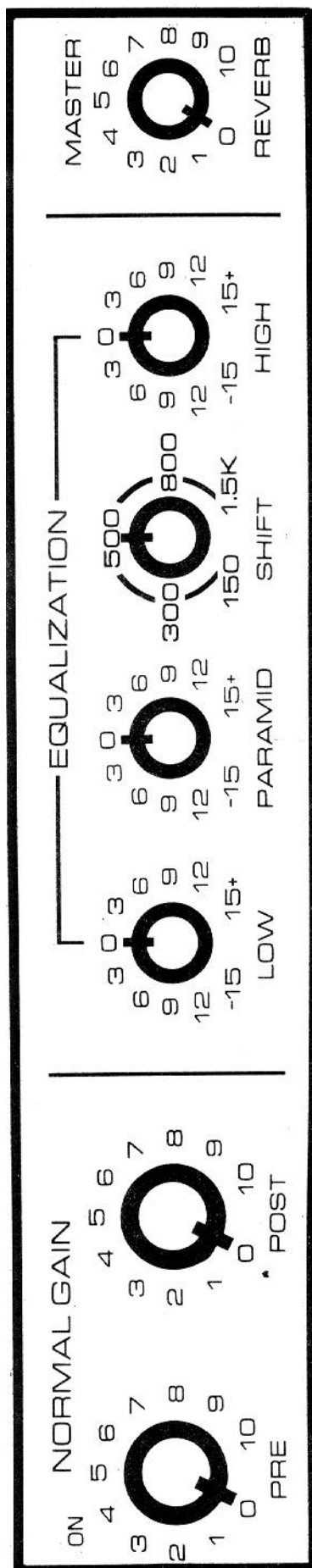
### CAUTION

**WHEN PROPERLY SET UP THE SATURATION™ CONTROL OPERATES THE POWER AMP JUST BELOW ITS CLIPPING POINT GIVING TOTALLY SMOOTH OVERLOAD CHARACTERISTICS. BY DRIVING THE POWER AMP TO ITS OUTPUT CLIPPING LEVEL, THE OUTPUT DOES NOT BECOME LOUDER JUST MORE DISTORTED AND SOMEWHAT LESS PLEASING.**

#### PRE GAIN CONTROL

The pre gain control is the first sensitivity determining element that the instrument signal comes in contact with when patched into the lead channel. This control is labeled zero (0) to 10 and functions very conventionally as do other Peavey pre gain controls. The pre gain device develops approximately one-fourth of its total available gain at the 12 o'clock position which leaves quite a bit of sensitivity adjustment between the #5 and the #10 setting. The final adjustment of the pre gain control should actually be set **after** the post gain function has been optimized for each particular situation. (See Post Gain Control.)





## NORMAL CHANNEL

### MASTER REVERB CONTROL

The master reverb control determines the desired amount of reverberation from the internal reverb system. Clockwise rotation increases the reverb effect and counterclockwise decreases the effect. This control is located on the normal channel but is in fact a **master reverb** for both channels.

### EQUALIZATION

#### HIGH EQ

The high equalizer is an active control with the zero (0) indication at "top dead center" as with the other active equalizers and is capable of plus (+) or minus (-) 15 dB at typical treble frequencies. This control is conventional in operation and produces a boost of high frequencies when rotated clockwise and a cut of the high frequencies when rotated counterclockwise.

**NOTE:** THE PRESENCE CONTROL ON THE LEAD CHANNEL HAS A MUCH HIGHER OPERATING FREQUENCY THAN THE HIGH CONTROL ON THE NORMAL CHANNEL.

#### SHIFT

The shift control is very necessary when used in conjunction with the Paramid™ control. Once you have established with the Paramid™ control a cut or a boost then you may, with the shift, locate this cut or boost at any point along the frequency spectrum between 150 Hz and 1500 Hz. Many different mid-range tone colorations may be achieved with these two controls once the operator understands how they interface. Typical operation of the shift is as follows: With the Paramid™ control in the minus (-) position a rotation of the **shift** counterclockwise usually causes a "thin" mid-range tonality and rotation clockwise usually causes a "fat" mid-range tone. With the Paramid™ control in the plus (+) position, a rotation of the **shift** counterclockwise will normally sound "fat" because of increased low end and a rotation clockwise will normally have more high end content because of a boosted upper mid-range tonality.

#### PARAMID™ CONTROL

The Paramid™ control is actually an active mid-range control with plus (+) or minus (-) 15 dB capability. This control works in conjunction with the shift control for the vital tailoring of the mid-range frequencies. The mid frequencies contribute a large part of the overall tonality for guitar in all forms of music and should not be overlooked as to its importance for the necessary sounds guitarists are trying to achieve. Clockwise operation of this control will boost mids while counterclockwise rotation will cut the mid range frequencies.

#### LOW EQ

The low frequency equalizer is an active device and is capable of 15 dB cut and boost of the lower frequency range. Notice, with active controls, there is a zero (0) designation at the 12 o'clock position which indicates flat frequency response. In other words, no change is being introduced at the low frequencies when this control is set at 12 o'clock (zero position). Care should be taken to not overboost with this control to avoid muddiness and premature overdriving of the power amp. Extreme overboosting of bass frequencies tends to distract from the projection capability of the amplifier and confuses material which should be heard for lead guitar situations.

#### POST GAIN CONTROL

Post gain control is very similar in operation to a master gain control and is after the entire preamp of the normal channel. This control should be operated near the full clockwise position for maximum headroom situations and may be operated at **less than "5"** for overload harmonic effects. The operation of this control is very conventional in nature and should present no problem. But, it should be kept near the midpoint of its travel to eliminate excessive power amp clipping when smooth harmonic overload is desired using the pre gain control. The normal channel is designed for clean sounds more so than overloaded tonalities so it is advisable to use the lead channel for overload distortion and the normal channel for "cleaner" applications.

#### PRE GAIN CONTROL

The pre gain control is the first gain regulating device the instrument signal comes in contact with in the normal channel and should be used to adjust for the amount of input gain that is necessary for a particular instrument. The setting of the pre gain control is always related to the position of operation on the post gain control as they do work in conjunction with each other. Once the post gain control is properly adjusted, then the pre gain control should be adjusted for amount of level desired.

#### PATCH PANEL

To allow in-line patching of the various accessories we have included a system of **preamp out**, **line out** and **power amp input** jacks on the front panel. The preamp out is a straight preamp signal which is the sum of the outputs of the two channels plus reverb. The output level is approximately 1 volt RMS and is a relatively low, 600 ohm, impedance source. Preamp out signal is connected through a switching contact to the power amp input jack and normally the preamp out is internally connected to the power amp's input. This circuit allows basically two **modes** of operation. When signal is taken from the preamp output, signal is also delivered to the internal power amplifier. For instance, a preamp signal may be patched out to some effects device or to another power amplifier without interrupting the signal delivered to the internal power amp. There is a **switching jack**, however, on the input of the power amp and whenever a phone plug is inserted into the power amp input the internal preamp signal is disconnected. A typical patch for in-line effects devices would be to use shielded cables and connect from the **preamp output** into the **input** of the **effects device** and from the **output** of the **effects device** back into the **power amp input**, thus completing the loop.

The **line output** is basically the same as the preamp output except it has been "frequency compensated" to minimize undesirable noise and also undesirable low frequency subharmonics that are not a part of the program material when feeding the instrument direct into a mixing console or a recording situation. When interfacing with a sound reinforcement system, the line output should always be used except when connecting effects devices, when the preamp output should be used.

Please note that line level devices are required to interface with this preamp out/power amp input loop capability and devices that will not function properly on line levels should not be used. Most effects devices that are designed to go between the guitar and the input of the guitar amplifier will not function properly in this situation where line levels are required because the 1 volt RMS output of the preamp signal will sometimes overdrive distort the effects devices.



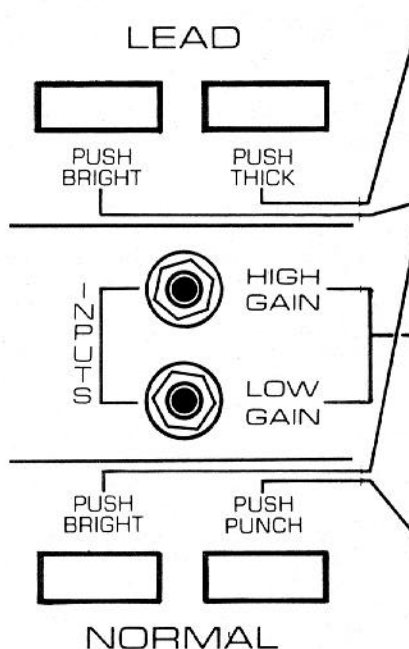
## REMOTE SWITCH SOCKET

The remote switch socket is a standard (DIN) type and serves as the chassis connection for the supplied remote footswitch. Please note that the (DIN) plug has an **indentation** that **must be mated** with the **matching indentation** in the footswitch receptacle on the front panel. This keying action allows the footswitch to be connected only in the proper manner. If the plug is forced or undue pressure is exerted on the shell or pins, damage could result to the footswitch plug or the chassis mounted socket. As with any precision device, reasonable care should be exercised.

FOOT SWITCH

## SWITCH SECTION

We have provided push switch functions for additional high end, "thick" mid-range or boosted low frequencies (Punch)



### PUSH THICK

The Push Thick feature **only exists** on the **lead channel** and is exactly the same as the Pull Thick feature which exists on some other Peavey products. This Push Thick switch activates the "thick" mid-range boosted tonality which is very popular with today's rock groups. Notice that the bass and mid controls have very little effect when Push Thick is activated on the lead channel. Most guitar players are seeking varying degrees of "fat", "gutt", mid-range for most rock applications and this Push Thick feature on the lead channel definitely gives that response.

### PUSH BRIGHT

There are Push Bright buttons for each channel that are designed to add that extra bite or high end boost so often needed by contemporary guitarists. The action of these controls is very similar to typical bright/boost switches except that we have located these very conveniently at the extreme left side of the front panel so that you can easily select the additional high frequency boost by the push-type switch.

### INPUTS

The new Citation™ has been provided with two input jacks, each having different sensitivities and a unique arrangement allowing the gain of both jacks to be equalized when instruments are plugged into both inputs. The high gain jack is the input normally used for most instruments and has considerably more sensitivity than the low gain jack. The low gain jack is 6 dB less sensitive than the high gain input and should be used when the signal from your instrument is very hot and premature overloading of the input is detected. Many times the low gain input should be used when extremely hot signals are available from other preamps such as effects devices, etc.

### PUSH PUNCH

The **Punch** control is active only with the normal channel and is an additional low frequency boost which is needed to give that extra "punch" for certain instrument applications. This feature is associated with the bass response of the amplifier and should be used with caution as you will notice the low frequency content greatly increases when the Push Punch switch is activated. As we have discussed previously, overboosting of the low frequencies may cause headroom problems and the **projection** of fundamental frequencies may suffer.

## REAR PANEL

### POWER SWITCH

On domestic units, the power switch is of the three-position type with the center position being "OFF". This switch has two "ON" positions, one of which is used to ground the amplifier properly. One of the "ON" positions will yield the lowest amount of residual hum or "popping" when the instrument is touched and this is the position that should be used.

On export models, we utilize a simple on/off switch that does not have multiple "ON" positions since the grounding (earthing) conditions vary with the different electrical systems of the United States versus other nations.

### FUSE

The fuse is located within the cap of the fuseholder and must be replaced with one of the proper type and value if it should fail. It is necessary that the proper type and value fuse be used in order to avoid damage to the equipment and to prevent voiding the warranty. If your unit repeatedly blows fuses, it should be taken to a qualified service center for repair.

### SPEAKER OUTPUT JACKS

There are two standard 1/4" phone jacks for speaker connections. The upper jack is labeled (MAIN) and the lower jack is labeled (AUX.). The (MAIN) jack must be used for patching to a single speaker enclosure. This enclosure should have an impedance of 4 ohms to allow the power amplifier to produce a full power rating of 160 watts. Operation with an 8 ohm (or higher) impedance enclosure is allowable but will result in a lower power output rating (see specs). Enclosure impedances below 4 ohms should be avoided since such operation causes excessive dissipation of the output devices and continuous operation in this overload condition will activate the automatic thermal protective circuitry.

The (AUX.) jack is provided for patching to a second (auxiliary) speaker enclosure. This auxiliary enclosure should also have an impedance of 4 ohms for the same reasons outlined above. The auxiliary speaker output jack is a transfer type which internally converts the amplifier to 2 ohm operation for driving the two (parallel) 4 ohms speaker enclosures. In summary, always use 4 ohm minimum speaker enclosures. If one enclosure is employed it must be plugged into the (MAIN) speaker jack. The auxiliary enclosure, if used, must be plugged into the (AUX.) speaker jack. **NEVER DAISY-CHAIN (PARALLEL) TWO SPEAKER ENCLOSURES.**

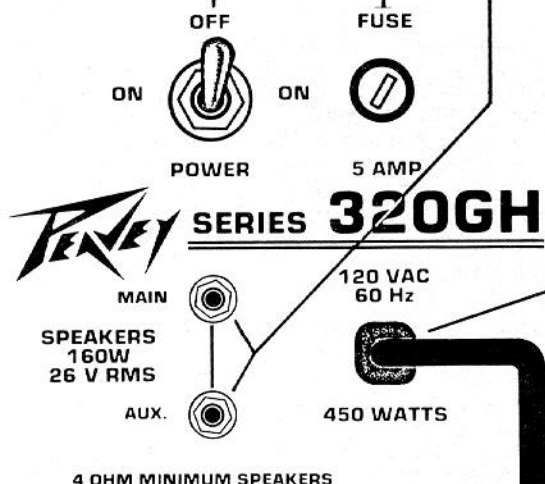
### LINE CORDS

For your safety, we have incorporated a three-wire line (mains) cable with proper grounding facilities. It is not advisable to remove the ground pin under any circumstances. If it is necessary to use the amp without proper grounding facilities, suitable grounding adaptors should be used. Much less noise and greatly reduced shock hazard exists when the unit is operated with the proper grounded receptacles.

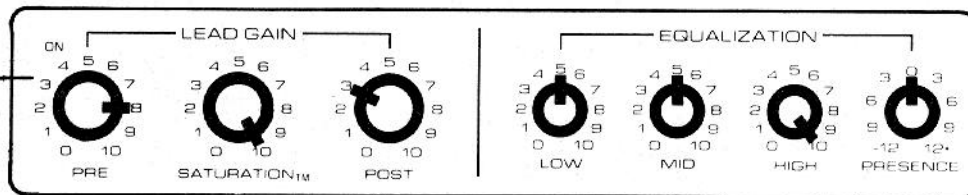
### POWER MODULE HEATSINK/CORD RETAINER

The heatsink attached to the power module has been designed to allow storage of the mains cable for travel. In operation the cable must be **completely** unwrapped to allow maximum heat dissipation from the heatsink.

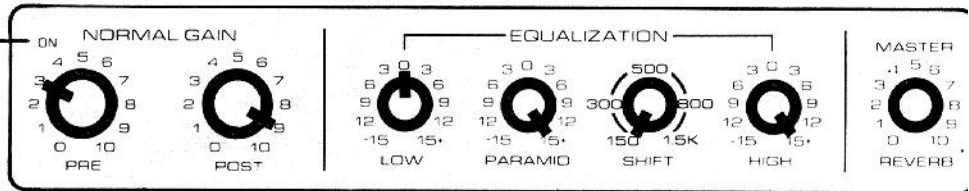
**UNDER NO CONDITIONS SHOULD THE HEATSINK BE BLOCKED OFF OR OBSTRUCTED DURING OPERATION. AVOID PLACING THE UNIT AGAINST A WALL OR IN A CORNER WHERE THERE IS NOT ADEQUATE AIR FLOW.**



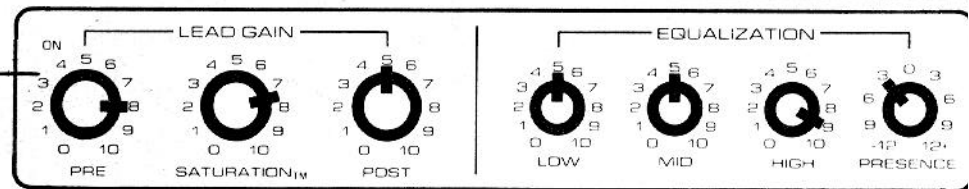
**MAXIMUM SATURATION**



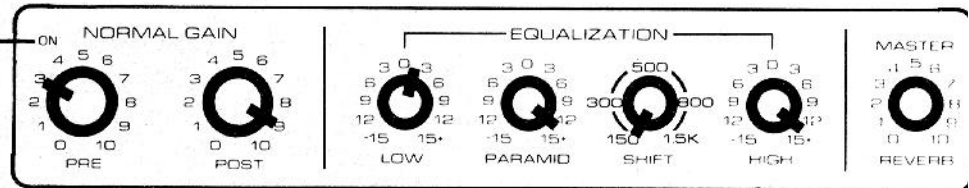
**CLEAN**



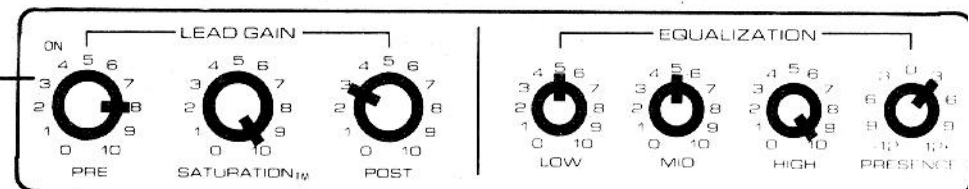
**SOFT SATURATION**



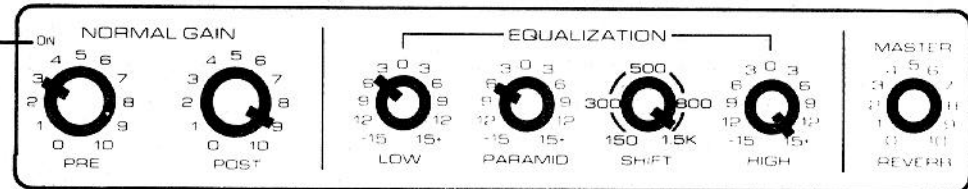
**JAZZ**



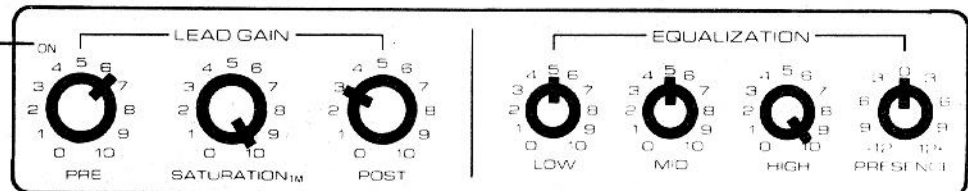
**MAXIMUM SATURATION**



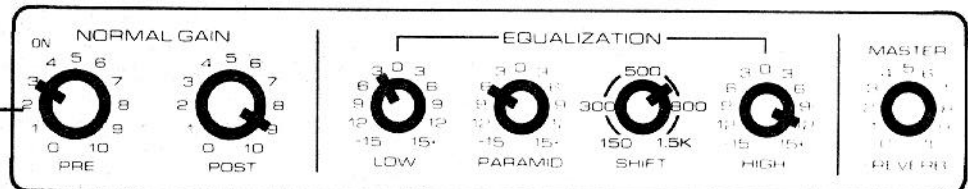
**COUNTRY**



**ROCK**



**RHYTHM & BLUES**



## DANGER

EXPOSURE TO EXTREMELY HIGH NOISE LEVELS MAY CAUSE A PERMANENT HEARING LOSS. INDIVIDUALS VARY CONSIDERABLY IN SUSCEPTIBILITY TO NOISE INDUCED HEARING LOSS, BUT NEARLY EVERYONE WILL LOSE SOME HEARING IF EXPOSED TO SUFFICIENTLY INTENSE NOISE FOR A SUFFICIENT TIME.

THE U.S. GOVERNMENT'S OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) HAS SPECIFIED THE FOLLOWING PERMISSIBLE NOISE LEVEL EXPOSURES:

DURATION PER DAY IN HOURS

SOUND LEVEL dBA, SLOW RESPONSE

8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

ACCORDING TO OSHA, ANY EXPOSURE IN EXCESS OF THE ABOVE PERMISSIBLE LIMITS COULD RESULT IN SOME HEARING LOSS.

EAR PLUGS OR PROTECTORS IN THE EAR CANALS OR OVER THE EARS MUST BE WORN WHEN OPERATING THIS AMPLIFICATION SYSTEM IN ORDER TO PREVENT A PERMANENT HEARING LOSS IF EXPOSURE IS IN EXCESS OF THE LIMITS AS SET FORTH ABOVE. TO INSURE AGAINST POTENTIALLY DANGEROUS EXPOSURE TO HIGH SOUND PRESSURE LEVELS, IT IS RECOMMENDED THAT ALL PERSONS EXPOSED TO EQUIPMENT CAPABLE OF PRODUCING HIGH SOUND PRESSURE LEVELS SUCH AS THIS AMPLIFICATION SYSTEM BE PROTECTED BY HEARING PROTECTORS WHILE THIS UNIT IS IN OPERATION.

## CAUTION

THIS AMPLIFIER HAS BEEN DESIGNED AND CONSTRUCTED TO PROVIDE ADEQUATE POWER RESERVE FOR PLAYING MODERN MUSIC WHICH MAY REQUIRE OCCASIONAL PEAK POWER. TO HANDLE OCCASIONAL PEAK POWER, ADEQUATE POWER "HEADROOM" HAS BEEN DESIGNED INTO THIS SYSTEM. EXTENDED OPERATION AT ABSOLUTE MAXIMUM POWER LEVELS IS NOT RECOMMENDED SINCE THIS COULD DAMAGE THE ASSOCIATED LOUDSPEAKER SYSTEM. PLEASE BE AWARE THAT **MAXIMUM POWER** CAN BE OBTAINED WITH VERY LOW SETTINGS OF THE **GAIN** CONTROLS IF THE INPUT SIGNAL IS VERY STRONG.

Due to our efforts for constant improvement, features and specifications are subject to change without notice.

### CITATION™ SPECS:

#### POWER AMPLIFIER SPECIFICATIONS:

##### 320-GH MODULE WITH AUTOTRANSFORMER

##### RATED POWER & LOAD:

160 W RMS into 4 ohms or 2 ohms  
(auxiliary speaker output jack is transfer type which internally switches to the 2 ohm tap for driving two parallel 4 ohm speaker loads)

##### POWER @ CLIPPING: (Typically)

(5% THD, 1 KHZ, 120 VAC line)  
(measured at the 4 ohm tap):

115 W RMS into 8 ohms  
175 W RMS into 4 ohms

2 ohms not recommended on 4 ohm tap

(measured at the 2 ohm tap):

65 W RMS into 8 ohms  
115 W RMS into 4 ohms

175 W RMS into 2 ohms

##### FREQUENCY RESPONSE: (4 ohm tap)

+0, -1 dB, 60 Hz to 15 KHz @ 150 watts into 4 ohms

##### TOTAL HARMONIC DISTORTION: (4 ohm tap)

Less than 0.2%, 100 mW to 100 W RMS,  
60 Hz to 10 KHz, 4 ohms, typically below 0.1%

##### HUM & NOISE:

Greater than 90 dB below rated power

##### POWER CONSUMPTION: (DOMESTIC)

450 watts, 50/60 Hz, 120 VAC

##### PREAMP SECTION:

THE FOLLOWING SPECS ARE MEASURED @ 1 KHz

WITH THE CONTROLS PRESET AS FOLLOWS:

##### (LEAD CHANNEL):

PUSH BRIGHT OFF (OUT)

PUSH THICK OFF (OUT)

SATURATION™ @ 0

POST GAIN @ 10

LOW & HIGH EQ @ 10

MID EQ @ 0

PRESENCE @ 0 dB

##### (NORMAL CHANNEL):

PUSH BRIGHT OFF (OUT)

PUSH PUNCH OFF (OUT)

POST GAIN @ 10

LOW EQ @ +6 dB

PARAMID™ @ -9 dB

SHIFT @ 300 Hz

HIGH EQ @ +9 dB

##### (EFFECTS):

REVERB @ 0

**NOMINAL LEVELS ARE WITH PRE GAIN @ 5.**  
**MINIMUM LEVELS ARE WITH PRE GAIN @ 10**

##### PREAMP HIGH GAIN INPUT:

Impedance: High Z, 220K ohms

Nominal Input Level: -26 dBV, 50 mV RMS

Minimum Input Level: -46 dBV, 5 mV RMS

Maximum Input Level: +4 dBV, 1.5 V RMS

##### PREAMP LOW GAIN INPUT:

Impedance: High Z, 44K ohms

Nominal Input Level: -20 dBV, 100 mV RMS

Minimum Input Level: -40 dBV, 10 mV RMS

Maximum Input Level: +10 dBV, 3 V RMS

##### PREAMP OUTPUT: (Full Range)

Load Impedance: 1K ohms or greater

Nominal Output: 0 dBV, 1 V RMS

##### LINE OUTPUT: (Frequency Compensated)

Load Impedance: 1K ohms or greater

Nominal Output: -10 dBV, 0.3 V RMS

##### POWER AMP INPUT:

Impedance: High Z, 22K ohms

Designed Input Level: 0 dBV, 1 V RMS

(Switching jack providing preamp output to power amp input connection when not used)

##### SYSTEM HUM & NOISE @ NOMINAL INPUT LEVEL:

20 Hz to 20 KHz unweighted

75 dB below rated power

##### EQUALIZATION: (Lead channel)

Special low, mid & high passive EQ

Presence: +12 dB @ 3 KHz (active EQ)

Push Bright: +6 dB @ 2 KHz

Push Thick: Special EQ (used with Saturation™)

##### EQUALIZATION: (Normal channel)

+15 dB @ 80 Hz & 5 KHz, shelving

+15 dB Paramid™, peak/notch

Mid shiftable from 150 Hz to 1500 Hz

Push Bright: +6 dB @ 2 KHz

Push Punch: Special EQ (used for protection)

##### AUTOMIX™ FOOTSWITCH FEATURES:

Reverb function defeated with footswitch selector/combiner for channel selection with LED indicators on each channel



**PEAVEY ELECTRONICS CORPORATION**

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